VOLUME XV *Price 15 cents* NUMBER 12

Virginia WILDLIFE

DECEMBER 1954

EDWARD J. BIERLY

CHRISTMAS

No trumpet-blast profaned
The hour in which the Prince of Peace
was born;
No bloody streamlet stained
Earth's silver rivers on that sacred morn.

—Bryant.

Virginia WILDLIFE

Published by VIRGINIA COMMISSION OF GAME AND INLAND FISHERIES, Richmond 13, Virginia

A Monthly Magazine Dedicated to the Conservation, Restoration, and Wise Use of Virginia's Wildlife and Related Natural Resources, and to the Betterment of Hunting and Fishing in Virginia

Volume XV DECEMBER, 1954 No. 12

In This Issue

Cover

The wood duck is Virginia's most colorful, all-year round, native duck. Artist Ed Bierly, of Arlington, painted the striking drake in a winter setting, which is quite typical of Virginia's woodland watercourses, the main habitat of this handsome member of the waterfowl family.

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SUBSCRIPTIONS: One Year, $1.00; two years, $1.50; three years, $2.00. Remittances by check or money order to be made payable to the Treasurer of Virginia. Local game wardens will accept subscriptions or they may be forwarded direct to Commission of Game and Inland Fisheries, 7 North Second Street, Richmond 13, Virginia.

Virginia Wildlife is published monthly at Richmond 13, Virginia, by the Commission of Game and Inland Fisheries, 7 North Second Street. All magazine subscriptions, change of address notices, and inquiries should be sent to the Commission, P.O. Box 1642, Richmond, Virginia. The editorial office gratefully receives for publication all news items, articles, photographs, sketches, and other materials which deal with the wise use and management and study of Virginia's inter-related. renewable resources: soils, water, forests and wildlife. Since wildlife is a beneficiary of the work done by state and federal land-use agencies in Virginia, editorial policy provides for full recognition of their accomplishments and solicitations of their contributions. Credit is given on material published. Permission to reprint is granted provided proper credit is given the Virginia Commission of Game and Inland Fisheries and Virginia Wildlife and proper clearances are made with authors, photographers, artists and publishers.

Entered as second class matter, November 10, 1947, at the post office in Richmond, Virginia, under the act of August 24, 1912

Why Wise Resource Use?

IT is good to be in southwest Virginia again and have the opportunity to see the wonderful resources of this rugged land and to have the chance of meeting and rubbing elbows with so many hard-working fellow conservationists. Believe me, it is a pleasure to be here.

And speaking of resources, I am afraid that too many of us in America still fail to realize how well off we are. The more I travel and the more I see, the more humble I get, because only in the vivid experience of seeing are we profoundly touched by the magnitude of our land. We have such abundance in this country that the wise use of our riches is seldom given a second thought. And yet, is man ever to learn? I sometimes wonder.

In looking over America, as I was privileged to do recently from an airplane from coast to coast, one must wonder how many of our citizens have pondered over the vastness of this continent and what has happened to it in the short space of 350 years.

From our history and geography books we know that America's richness was unequaled anywhere else in the world. When Captain John Smith landed on the shores of the James River at Jamestown, the world that greeted him was a world of great wealth—wealth not so much in gold and silver which many were seeking at the time, but wealth infinitely greater than the finest of rubies and precious stones worn by Queen Elizabeth herself. Forests and grasses and wildlife covered the continent, and through the virgin greenery on all sides flowed the cleanest rivers that man ever saw.

The story goes that a white-tailed deer racing through the forests of what is now Maine would never have to leave the shadows of the woods, except for the water courses, until it reached the Texas plains. So vast and so rich and so breath-taking was the scope of the resources of our land.

But what's happened to it? In the short space of 350 years we have cut down the forests, exposed the precious topsoil, eroded it, polluted and poisoned the rivers and streams, killed off fish, and decimated our wildlife to the tune of 15 extinct birds, 5 mammals, and pushed 57 other American species of wildlife close to oblivion. All this in the short space of less than 350 years! What does this mean? What does this disregard for our basic wealth tell us? Will history repeat itself in America?

Ancient Examples of Wasted Lands

Beneath the baking sands of Sahara lie the ruins of a once flourishing civilization—great and glorious cities now dead and forgotten, their powerful monarchs but a faint recollection in ancient history.

Long before the birth of Christ, there existed to the east of Jerusalem peoples of great fortune and name and culture. Between the Tigris and the Euphrates rivers they learned the arts and advanced in agriculture. They learned to do ingenious things but they failed to learn man's greatest lesson: that he cannot rise above the limits of his natural resources and prosper.

The ruins of Babylon—those hanging gardens of ancient Mesopotamia—are considered one of the seven great wonders of the world. But what are they today: stilled, shadowy, ghost-like memorials to a wasteful and decadent civilization—a monument to people who failed to heed a valuable lesson. Six hundred miles east of where Jesus of Nazareth preached his 10 Commandments, we find nakedness, hunger, want. Yet Syria was once a great nation!

Africa! What about north Africa? The story is the same. Great, rich countries, empires of prodigious power, now covered by great depths of drifting, wasting sand, their peoples gone, forgotten.

And Greece! What about Greece, even in recent times? Greece who is struggling so valiantly to keep out of the sprawling tentacles of nearby communism, what about her? Greece too was once a forested country. Sixty percent of her land was once in forests. And was there ever a civilization whose culture rose to greater heights than Greece? Today her forests are gone—reduced to a mere five percent, her people ill fed, begging.

But we need not go to Babylon or Mesopotamia or Greece to see the workings of history and the folly of man; we can find examples of imprudence in our own country.

American Examples of Waste

Less than 50 years ago the town of Goforth, Texas was a busy little place with a post office, stores, schools, churches and homes. Business thrived from the fertile farm land around. Property sold for around $200 an acre in 1900. When the word got around about the price of the land, more settlers moved in, began cultivating the hillsides and doing everything contrary to wise use. Soon the fields began to erode and great gullies formed on the ridges and in the fields and natural drainages became clogged with silt. Today, Goforth is a ghost town. Its houses, schools, churches and stores are in ruin, its people gone. The community is deserted. The people failed to take care of what they had.

Down in Copper Hill, Tennessee, the picture is equally bleak. Acres and acres of once wonderful farm land country have been devastated by copper strip mining, a

(Continued on page 15)

Talk by VIRGINIA WILDLIFE editor, J. J. Shomon, before the Third Annual Convention of the Virginia Wildlife Federation, October 10, 1954, at Narrows, Virginia.

Virginia Chamber of Commerce photo by Flournoy

If America is to grow and prosper, its life-sustaining resources must be strong, plentiful and healthy.

Industry's Stake in Conservation

By WALTER C. GUMBEL

Industry's support of the conservation movement is just good business, points out the author in this article. Where the wise use of resources can be presented to industrial interests as a dollars-and-cents value, something that can directly affect their own economic welfare, then you can depend on their help. This is a basic concept which also applies to farmers and ranchers. The article also outlines some industry sponsored resource activities which have wide application.

THERE IS NO SUBSTITUTE for productive land, upon which man must depend for his food and much of his clothing and shelter. It is the basis of most of the nation's and world's wealth. Even the skyscrapers of Detroit, Pittsburgh and New York rest on the productive soils of America. We also depend upon the land for the production of water, for hunting and fishing, for outdoor recreation and for our lumber requirements. There is no other source—even in this atomic age! If America—its industries, its agriculture, its business and financial interests and its community life—is to grow and prosper, then its resources must be strong, plentiful and healthy.

Standard of Living Dependent on Ample Food

The limits of our industrial system and standard of living are set by the available food supply. Just now we are hearing much about agricultural surpluses. However, the problem, in my opinion, will be one of shortages—not surpluses. This assumption is based on the continued growth of population in the United States. Estimates of renewable resource demands during the next 25 years range from 25 to 40 percent greater than current production. Therefore, it is probable that less than a century from now the soils of this country will need to support a population double that of today.

THERE is not enough *new land* available to meet the expanding needs of the future. The rising demand for foods and other resource needs must come from increasing the per-acre yields of our crop and pasture lands, and our range and forest lands. I feel certain that this can be done through new research and other technological advances. In the meantime, however, land resources are adequate to meet our needs for a long time to come, *provided we care* for them properly.

Walter C. Gumbel, a member of the SCSA, is conservationist for the Monongahela Power Company, Fairmont, West Virginia. He is also editor of the *Journal of Soil and Water Conservation*.

This paper was presented at the Third Conservation Conference sponsored by the Conservation Council of Business, Industry and Finance held at Gaylord, Michigan, May 20, 1954, and is reprinted with permission from the *Journal of Soil and Water Conservation*.

The forested watershed is key to future of our water supply and much-needed recreation. Industry's stake in our basic resources is important indeed.

Technology Must Keep Ahead of Population

These are but a few of the more basic natural resource observations with which we as a nation are confronted. To meet our needs in the future, there is, as I mentioned before, one off-setting factor—the reliance on technological progress. Developments in research covering the renewable resources can be expected to further reduce soil and water losses and bring about improved soil structure, fertilization, hybrid seeds and animal breeding. Improved woodland management practices and resulting benefits in the form of hunting, fishing, recreation and, above all, the production of water, can also be expected. On the side of the non-renewable resources, progress must be made in the discovery of new sources of minerals and other essential elements in finding substitutes and in the reduction of waste. *America's position in world affairs and our desire to live as a free people make it imperative that more than passing thought be given to the status of our basic resources—not only by government, but by industry, agriculture, business and financial interests.*

The question is often asked, "Why is this country so richly endowed, while older Asiatic and some European countries have extremely low standards of living?" Here in America an abundance of resources, to be sure, is a basic contributing factor. More important, however, is the fact that technological developments have kept ahead of the growth of our population. In countries where population pressures are great and resources have been dissipated, energies must be expended for the production of food which often takes 90 percent or more of income. This makes it extremely difficult for modern technology to step in to do the job as we know it here in America—primarily because of the lack of available technical knowhow and capital investment. *In other words, as long as technology keeps ahead of population growth, and our resources are developed and used wisely, we need not be too greatly concerned with future resource requirements.*

Water is a Basic Resource

Insofar as the present is concerned, there are some resource problems that need our attention, water being foremost in this category. There have been cries of water shortages to be sure, but there is no crisis—just problems galore. In this connection, I am told that the steel industry by 1975 will be using 20 billion gallons of water per day; the chemical industry, 30 billion gallons; the petroleum refining industry, 15 billion gallons; and pulp and paper, 8 billion gallons.

It takes 1,500 tons of fresh water per year to maintain a United States citizen in his customary manner. This does not include the water that is channeled through power plants or the rain that falls on forests and farms and runs off to the sea. It requires 4,000 gallons of water to produce a bushel of wheat, 65,000 gallons for a ton of highly finished steel, 80 gallons for one kilowatt hour of electricity, and 100 gallons to produce a pound of rayon. It is clear from this that industry has an important stake in water as a basic resource.

There are other problems, too. Our growing needs for recreational facilities require greater development of hunting and fishing, of parks and forests and picnic areas. A population with more and more free time on its hands demands it; our growing recognition of what tourist trade can mean to our economy also demands it, as an out-and-out business proposition.

Where Does Industry Fit Into the Picture?

We are convinced that our support of the conservation movement as it affects the renewable natural resources is just good business. Our success depends on the economic well-being of our customers who in turn depend heavily on resources. Our interest is selfish, yes; but perhaps that is the soundest kind of interest. For a number of years we have been encouraging others allied with our company to get behind worthwhile projects covering the wise use of the renewable resources for their own good. We are firmly convinced that when you are looking for allies in such an undertaking, the best approach is to look to those who have similar interests. Where the wise use of resources can be presented to industrial interests as something that can directly affect their own economic welfare, you can depend on their help.

Helping to Implement the Efforts of Others

There is a lot to be done—mainly to create a concern and interest among the people of the territory we serve, and to make communities fully aware of their role in the planning. If the program to manage our land and water resources is to serve the best interests of all, it must be planned at the community watershed level.

Actually, there is no fixed plan for attacking the conservation problem. The sensible course is first of all to get our direction from the people who have been trained in conservation and resource development. After all, we are in the electric business, and expert as we may be in running our own operations, we are amateurs when it comes to things like conservation and agriculture. We *can help*, however, and that is what we are trying to do. Besides the more direct dollars-and-cents value, we figure our effort pays off in the form of good public relations.

photo by Indiana Coal Producers Assn.

Industry can do much to help implement resource conservation. Reforestation and planned wise use of lands for the present and the future are but a few things that can be done.

The Complete Treatment of Watersheds

The solution to resource problems covering floods, soil erosion, water shortages, pollution, forest and wildlife management and others lies in a program that requires the complete treatment of entire watersheds. In this connection, I am not thinking of the Missouri River Basin but of areas like the Betsie in Michigan, the Ten-Mile in West Virginia and other watersheds ranging from 15 to several hundred square miles. In these areas local people and organizations can complete a watershed development program in a relatively short time. Also this approach provides an excellent opportunity for various governmental agencies to cooperate with industry, business, agriculture and other organizations at the local community watershed level.

With these principals in mind, the West Virginia State Chamber of Commerce, several years ago, conducted a state-wide Watershed Development Conference, followed by four similar conferences in each of our principal river basins in cooperation with industrial, agricultural, urban, wildlife, recreational and other related groups including the press. Definite steps as a result of these meetings have already been taken to start the big conservation job at the local watershed level. The people living in these areas will depend on help from local, state and federal governments but they will be in a position to say what they want done and how. They have learned that agencies from the outside, no matter how efficient, cannot know the community's local problem as well as the community itself.

The conclusions reached at these meetings and related sessions covered specific resource and conservation development objectives such as: recognition of the watershed as the proper unit for utilizing and developing all types of land; provision for retardation and prevention of floods; provision for an abundant supply of water for all needs; development of wildlife refuges and food and cover programs; abatement of stream pollution; and expansion of recreational facilities, with more lakes and streams suitable for boating and fishing.

All lands should be treated in accordance with their peculiar needs and by methods that will control soil erosion, conserve water, enhance wildlife, improve farm income and prevent flood damage to agricultural lands. Flood prevention is necessary to guide the raindrop into the soil and to protect the soil from erosion, flood control to hold excess water, and flood protection to protect property and land bordering streams.

Flood control and flood prevention are not in conflict, but supplement each other. The more you prevent, the less flood waters you have to control.

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When Do They Hatch?

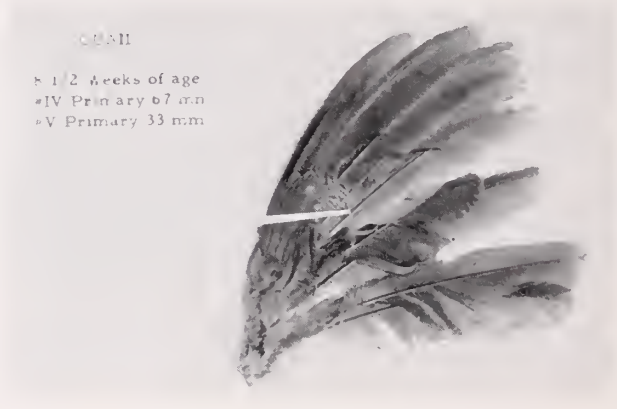
By George Gehrken
District Game Biologist

DURING the past five years, while investigating the composition of the bobwhite quail population and their hatching dates, the hunters in southeastern Virginia have been cooperating in the collection of wings to make possible an enlightening and interesting study. By this help the universal question, What can you learn from quail wings?, can now be answered.

From quail wings the biologist can learn the ratio of juvenile to adult quail, which gives an indication of quail production. Production success, the result of the relative nesting, hatching and survival, results during the summer and early fall. The average percentage of juvenile quail in the collected wings for the past five years proved to be 81.6 percent. This indicates that the normal composition of the fall quail population in southeastern Virginia is about 80 percent juvenile. From juvenile wings it is possible to determine the hatching dates for these quail.

Ten good quail hunters from each of thirteen counties in southeastern Virginia were selected by the county game warden. Each was requested to save one wing from each of the first ten quail killed during the season. The wings were placed in special envelopes with the date that the bird was killed, county hunted in, and sex. If the wings were collected during the first week of the hunting season in eastern Virginia (November 20-26), the date of hatch can be determined within one week providing the bird was hatched after June 26. If it was hatched before June 26 it can be determined whether it was hatched during the current year or before. Birds hatched prior to the current hatching season are considered adults, those hatched during the current hatching season are juveniles, even though they are completely grown when they're 21 weeks old. The ratio of adult to juvenile quail will give the biologist an indication of the productivity of the bobwhite, while the hatching dates will determine the peak months of hatching.

The adult bird is characterized by the primary coverts having uniform grayish coloration.



Juvenile bird plumage—early stage.

How to Age

In order to determine the age of quail it is first necessary to know the names of the various wing feathers. The primaries and the primary coverts are the most important ones to learn. The adult bird is characterized by the primary coverts having uniform grayish coloration (see Plate 1), the IX and X primaries having rounded tips, and the same grayish coloration of the other primaries. The juvenile bird (Plates 2, 3, 4) has light buff tips on the primary coverts, the IX and X primaries being pointed and more brownish than the other primaries that have been molted.

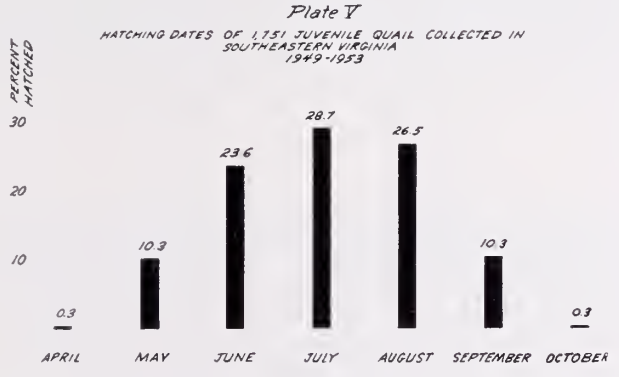
The age of the juvenile quail is determined by the progress of the molt of the primary feathers. The No. 1 primary is lost when quail are four weeks old. Then one primary is lost every week through the ninth week, example II primary at the fifth week and III primary at sixth week, etc. The VII primary is lost at 10½ weeks of age, the VIII primary is lost at 11½ weeks, and the VIII primary is completely grown at 21 weeks. The IX and X primaries are not molted until the quail are approximately a year and one-half old. After the quail are 21 weeks old, the age can be determined only as adults and juveniles.

Contrary to popular belief, most of the quail in southeastern Virginia do not hatch during the month of June. This investigation indicates that July is the month in which most of the quail hatch. The accompanying graph is the result of the examination of 1,751 wings of juvenile

A contribution from quail studies under the Pittman-Robertson (Federal-aid) program.

quail during the past five years. Of these, 34.2 percent of the quail were hatched before June 26; 28.7 percent hatched between June 27 and July 30; 26.5 percent hatched between July 31 and September 3; 10.3 percent hatched between September 4 and October 1; and 0.3 percent hatched after October 1. After the examination of the hatching records from other states it is assumed that approximately the same percentage of the birds hatched in April as October, and the same number hatched in May as September. From this data and assumptions the curve of probable hatching is drawn. Interpolations are made for April, May, and June.

This data should provide the hunter with information to enable him to analyze his bag of quail, which averages about 80 percent juvenile. If the hunter separates the young, tender quail from the tough adults, the lady of the house should be able to prepare a much better game delicacy. Too, with an adequate knowledge of the hatching dates the farmer can be more careful in avoiding quail nests during farming operations from June through August.



Graph showing results of examination of 1,751 wings of juvenile quail.

Juvenile bird plumage—advanced stage.

Final advanced stage of juvenile bird plumage.

INDUSTRY'S STAKE (Continued from page 7)

Local Groups Have Resource Responsibilities

These objectives, as a group, represent the combined thinking of industrial, agricultural, business, financial and recreational interests. There is no conflict. Plans and developments are well along in translating these objectives into action programs on a community watershed basis; also to bring about their acceptance by the state as "state policy." It is our firm belief that states and local units of government must share in the resource development of their areas by providing leadership, finance and legal status. If this is not done, the only course left open is for the federal government through its appropriate agencies or commissions to do the entire job for the people. The federal government has definite resource conservation responsibilities and should work with and through the states wherever it is feasible.

Water is no respector of boundary. Because of this we cannot, as representatives of industry, limit our efforts entirely to the local level if watersheds are to be fitted together in the kind of pattern that will serve the best needs of the nation.

Some Industry Sponsored Resource Activities

1. ***Advertising and publicity.*** Preparation of conservation advertisements for placement in newspapers and magazines; also the preparation of similar materials for radio and television programs. Development of conservation exhibits and display materials for use in store windows, meetings, fairs, schools and other public places. Provide visual aids including kodachrome slides, film strips, movies, display photographs and other means to further emphasize the conservation story.
2. ***Conservation contests.*** Co-sponsor with local soil conservation districts, schools, youth groups and other conservation interests, contests featuring (a) land judging and appreciation, (b) conservation essays and public speaking contests, (c) demonstrations emphasizing resource development for adult and youth groups.
3. ***General conservation education.*** Encourage the formation of conservation education workshops at local and state levels for teachers, industrial leaders and youth groups, arrange conservation forums in high schools, in colleges and through community organizations. Provide scholarships for boys and girls; also for teachers who are planning to attend summer conservation camps and workshops.
4. ***Field days and tours.*** In cooperation with local con-

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Virginia's State Forest Resources

present status and future supply

By E. E. RODGER
Virginia Forest Service

Virginia Forest Service photo by Heltzel
Virginia's forest wealth ranks high as one of the state's basic assets.

IT WOULD BE a healthy thing if the public could draw up a chair at meetings of this kind. Here the people would gain a comfortable assurance that men of soil and forest, field and stream, technicians and enthusiasts, professionals and amateurs are thinking and planning far beyond their lifetime—in the interest of publics yet unborn. Here the people would come to realize that excepting for a few, there are no basic differences in the objectives of those concerned with the future of Virginia's natural resources.

Virginia was endowed by the Creator with everything that goes to make for a healthy, enjoyable environment. You have all heard the story that took place in 1600 concerning a squirrel traveling south, through Virginia, and never having to touch the ground at any point because of the heavy, continuous growth of timber. Whether this is truth or fantasy is not too important, but we do know that there was a heavy growth of timber present when the settlers began building their homes and clearing land for agricultural purposes. Sometimes we are prone to condemn our forefathers for their destructive land use techniques.

In defense of those old-timers let us try to imagine ourselves in the shoes of a Virginia landowner in the 1700's. His civic and political leaders encouraged him to destroy the forests, clear the land and plant crops lest there be a feed famine for the population and its animals. Hidden danger lurked in the forests. Trees shaded crops planted under them—so the trees went. Fire was a land clearing tool—so fires were set. Yes, great damage was done to the wooded areas—to the soil and to wildlife. The creeks, the rivers and all water courses suffered when the land was damaged. But, while the large-scale land clearing was in progress—don't you think the landowners had the pride of good citizenship in their minds and hearts?—"If it weren't for the sheer waste and aggressiveness of our forefathers we may be still nothing more than a small colony on the eastern seacoast.

Let's move rapidly up to the early 1900's and dwell specifically with Virginia's forest resources. It was during this period that the large sawmills moved through Virginia's mountainous sections harvesting the timber from land that had not been cleared for agriculture. At the same time a few men graduated from accredited forestry schools and began to preach forest conservation along with Teddy Roosevelt, Gifford Pinchot and William Greeley.

Forest fire prevention and suppression was the first big job for the new professional man and in 1914 Virginia saw fit to set up a State Forestry organization. Progress appeared slow at first but, when we look back upon the accomplishments of a young profession and the interest of the public in general in Virginia's timbered areas, we have come a long way but there is still a lot more to be done.

The 1953 forest survey reveals the following: There are 15,300,000 acres or 60 percent of Virginia's land area devoted to forest cover. Of this total approximately 13,700,000 acres are owned by private citizens and companies, 100,000 acres by state and local government and 1,418,000 acres by the federal government, 1,260,000 acres of which are in national forests.

Percentage wise, you, you and you, the private landowner, own over 90 percent of the woodland. It is from

Talk before the Izaak Walton League of American State Convention, Hotel Jefferson, October 2-3, 1954, Richmond, Virginia.

the small privately owned woodlots that the bulk of raw materials are derived which feed the screaming saws of the lumber industry, the steaming digesters of the pulp and paper industry, the whirling knives of the excelsior plants, and the hungry gears and saws of Virginia's forest products industry. Gentlemen, this is important, ¼ of all wage earners in Virginia derive their living from the forest products industry. We are destroying entirely too many acres with wild fire. The past 2½ years have been witness to the destruction of 159,877 forest acres by 6,936 fires and we still have the fall fire season to face before the books are closed.

How long is the burned area converted to a road 66 feet wide? The area burned during the past 2½ years would make a charred waste 66 feet wide reaching from the Jefferson Hotel (Richmond, Va.) to Los Angeles, California, back to New York City, down to Florida, across to San Francisco, over to Portland, Maine, down again to Florida and back to California.

What can the thousands of private timberland owners do to keep their forests producing? One starting place is the prevention of forest fires and if fires once get started, in spite of prevention efforts—we must have prompt reporting and quick suppression. Old Smokey Bear's program, with which you are familiar, is a good example of cooperative forest fire prevention efforts. To encourage landowners to handle timber as a crop—the Tree Farm movement and the Cash Crops program along with the Virginia Forest Service's timber management service are doing much to improve Virginia's timber resources. In 1920 Virginia broke ground for its first forest tree nursery, at which time 8,491 tree seedlings were produced. In 1954 the combined output of the two state nurseries will amount to more than 15 million seedlings.

photo by G. N. Smith

Forest fire prevention and suppression was the first big job for professional foresters.

Virginia's future timber crops and game depend upon the degree of fire protection we give our woodlands.

Gentlemen, with statistics and figures we can paint any kind of word picture we wish to paint. In conclusion let's look at a few facts we all agree on and let each man make his own interpretation of the forest situation in Virginia:

1. We are in the midst of one of the worst droughts of all times.
2. A total of 6,969 forest fires burned 159,877 acres in the past 2½ years.
3. There is 22 percent less pine sawtimber in 1953 than there was in 1940.
4. About 700,000 acres are in need of forest tree planting.
5. The forest products industry is Virginia's second largest industry and employs ¼ of all wage earners in the state.
6. Virginia's forest land, if protected from fire and wisely managed, is capable of doubling its merchantable volume available for harvest.

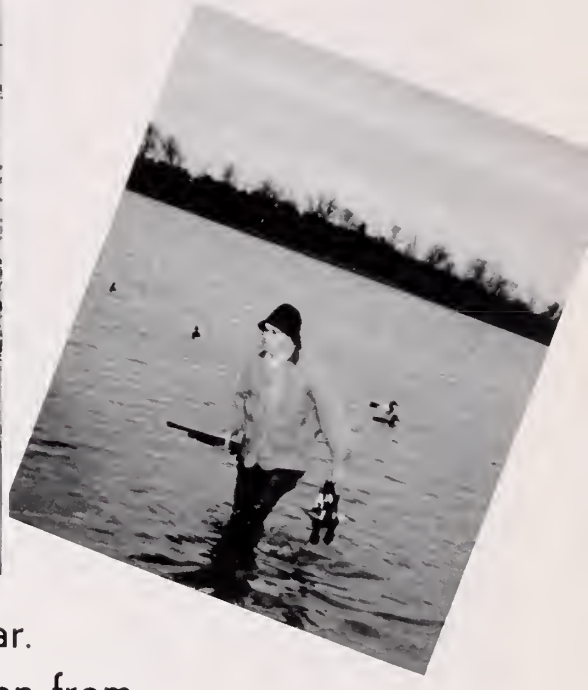
Some immediate steps which might be undertaken by this group to improve the forest conditions are:

1. Caution all hunting companions to obey the rules of fire prevention while on the hunt this fall.
2. Plant the pine seeds which are given with the purchase of hunting licenses.
3. Encourage landowners to plant trees on idle and eroded acres.
4. Support the Governor if and when it is necessary to close the forests because of critical fire danger.

In closing let me tell you a little story about two Greek boys who lived in the days when Greece held the reins on an empire.

The Greek boys questioned the ability of a famous oracle to an unfair test. Their plan was to enclose a small humming bird in their fist and ask the oracle what they held in their hands. If the oracle guessed correctly they would ask if the bird were dead or alive. If the oracle replied dead—they would open their hands and let the bird fly away. If the oracle said alive—they would squeeze the life from the bird with an almost imperceptible movement of their hands. After due deliberation by the priests, the boys were permitted to visit the oracle. They went through the approved ritual and finally asked the oracle what they held in their hands. The oracle replied, "It's a bird." Then the boys asked the all important question, "Is it dead or alive?" The oracle replied, "You hold the answer in your hands."

Then, as today, we too hold the answer in our hands. Which shall it be—blackened, charred wastes or beautiful acres?



Wildlife is a crop of the year.
This is the conclusion from . . . . .

BANDS, WINGS AND BAGS

By LEONARD E. FOOTE
Field Representative
Wildlife Management Institute

THE Virginia duck hunter grumbled when the card came through the mail. "Another one of those federal gimmicks. 'How many ducks did you kill? How many were banded birds? What were the band numbers? Had they already been reported?' What did they need that fool information for, anyhow?"

The Louisiana dove hunter grumbled, too when he was checked by a state conservation officer and asked if he had killed any banded doves, how many hours he had been hunting, and how many birds he had crippled and not retrieved.

The Alabama hunter was no different. He grumbled, too, when the letter came asking him to save a wing from each quail he killed and send it to the Alabama Cooperative Wildlife Research Unit. What did they want wings for? Stew, maybe.

No, not stew. And not to hang in a museum, either!

For from wings and bands and hours hunted and crippling losses come facts. Facts that the Virginia, Louisiana and Alabama and other state game and fisheries departments and the U. S. Fish and Wildlife Service use to help balance their annual wildlife budget sheets. Facts that are called upon and used to form part of the basis for the next season's hunting regulations. Facts that are used to help evaluate habitat management programs, the opening or closing of refuges, facts upon which to build for a progressively increasing sustained yield of wildlife, even in the face of greater demands for food and fiber on this country's lands and waters. Facts simply to understand wildlife populations, their rise and fall.

Under the Pittman-Robertson Program during the last two years, 25 state game and fish commissions have used, or are using, the postcard questionnaire method to determine game kills, some 15 states are making field hunter bag checks, and 11 states are using Federal Aid funds and personnel to conduct tagging or banding operations. These, therefore, are methods to obtain facts important in wildlife management, facts to understand seasonal changes in wildlife abundance.

Wildlife authorities use many techniques for following the changes in wildlife populations through different seasons of the year. Waterfowl are inventoried early in the summer by airplane counts of nesting pairs, later by brood counts, and during the winter by a cooperative "winter inventory"; pheasant abundance is appraised in the spring by crowing counts, by road counts after the peak of the hatching season; quail by whistling counts in the spring, or by bird dog covey censuses in the early fall or late winter; mourning doves by call counts in the early summer and by road counts later; deer by drive censuses, track counts, pellet counts, or by analysis of the kind and extent of browsing the range has withstood.

Inventories of this kind are the first step in management, just as they are the first step in the annual business cycle. Results of breeding ground counts are studied carefully and serve to make the first long-range forecast of the probable fall population. When compared from year to year with economic and land-use trends, breeding season counts may enable the wildlife manager to revise his long-term management effort to counter the effects of

a change in land use so that hunting can be sustained in the face of a new trend in agricultural economy. Breeding season inventories furnish the base for all management and the index against which seasonal regulatory changes are measured.

Next comes the post-breeding season inventory, usually conducted after the peak of the hatching season and from which a better forecast of the fall population can be made. This is perhaps the single most important check point in the annual rise and fall of any wildlife species. Most of the season's young have been born, and it is the period of maximum population, when the wildlife manager can best foreguess the population available to the hunter a few months hence. For those kinds of wildlife which can be counted after the breeding period, it is primarily on this information that the annual hunting regulations are based.

Not all species are susceptible to this kind of inventory. Woodcock cannot be counted economically and accurately by any known method at the conclusion of breeding, and the spring singing ground count of breeding males is used as a basis for regulations. Most of the state and province game and fish departments in the breeding range of the woodcock, including the Virginia Game and Inland Fisheries Commission, cooperate with the Fish and Wildlife Service in singing ground appraisals. Surprisingly accurate estimates of the late summer or early fall populations of waterfowl and pheasants are obtained. The number of ducklings in broods of most kinds of waterfowl can be counted with considerable accuracy from the air and ground, and early morning observations of pheasants along roadsides are used to make reliable predictions of the fall pheasant population.

The Virginia duck hunter, Alabama quail hunter, and the Louisiana dove hunter have something in common: useful information and data on the wildlife harvest which the biologist can use in game management.

The Virginia duck hunter, the Louisiana dove hunter, and the Alabama quail hunter have something in common. No one of them realizes how much the fall hunting success is dependent upon the breeding season and the survival of the young. Nor do any realize that the facts obtained from analysis of band recoveries, wings, and hunter bag examinations are a direct counter check on the spring and summer inventories, as well as a rough yardstick of breeding season production.

Take band recoveries. The average hunter probably thinks of band recoveries as a source of information on bird movements; some hunters may know that banding furnishes information on the length of life of wild birds; few hunters know that band recoveries are an index to mortality of wild populations.

Most of us are prone to scoff at the amateur bird-banders who have been held up to ridicule so often that many of us lose sight of the fine contributions this group has made to the foundation of modern game management. From before 1920 to after 1930 practically all the bird banding was done by amateur bird banders. This backlog of information in the bird banding office of the Fish and Wildlife Service has been the basis of many of the improvements in management of migratory wildlife. Since the middle 1930's, more and more banding has been done by university, state, provincial and federal employees, usually for specific information needed in management.

Banding is expensive. About 40,000 mourning doves were banded during the Cooperative Mourning Dove investigation from 1948-1953 by the states and the federal government at a cost in excess of $1.00 per bird. With a dove recovery rate of only about 3 percent, information from banding operations, although extremely valuable, is expensive to obtain. Perhaps if more hunters realized this, there would be fewer unreported bands and thus more information for the wildlife administrator from the money spent for banding.

With recoveries from other species varying from about 2 to 18 percent, it has taken time to build an adequate recovery file even to outline major migration routes of our commonly hunted game species. And on some, like the woodcock, there are still considerable gaps in even this most fundamental information. Only a few woodcock band recoveries have been made south of Pennsylvania and north of the wintering grounds in Louisiana, Mississippi and Eastern Texas, so migration routes and preferred habitat types over half the migration route are virtually unknown.

As band recoveries accumulate, these records become increasingly valuable as indicators of production, survival, and mortality of the species in question. Using band recoveries for this purpose may at first appear remotely related to Einstein's Relativity Theorem or at least to some form of higher mathematics. The essentials of the process, however, are simple, and would not stump a sixth grader, once some fundamentals are grasped. The first fundamental is that in a stable wildlife population,

one that is neither increasing nor decreasing over a period of years, the rate of annual loss is balanced by the rate of annual new production. Any changes in the rate of loss or in the rate of production yield consequent alterations in population size.

Designation of the rate of loss, or the rate of mortality, therefore, is of prime importance to the wildlife authorities.

Band recoveries offer the best known means of determining the rate of mortality for many kinds of wildlife. From a series of band recoveries the wildlife biologist may construct a "life table" by recording the number of bands which are recovered during the year of banding and during subsequent years. As a simple illustration, suppose that 1,000 bands have been recovered from quail which were banded soon after they left the nest. Perhaps 785 bands were recovered prior to the following nesting season, a mortality rate of 78.5 percent for the first year of life. Out of the remaining 215 bands, perhaps 140 had been recovered during the second year after banding, a mortality rate of 65 percent during the first year of *adult* life. Fifty of the remaining 75 bands might have been recovered during the third year after banding, a mortality rate for the second year of adult life of 68 percent. Similar computations with the remaining 25 recovered bands yield the rest of the life table. From it may be concluded that mortality of juvenile quail of the same age at banding as this sample, is about 78 percent per year, or that 78 percent of the young quail do not live to breed even once. Adult quail have a better chance of survival than do the juveniles, only about 65 percent of the adult quail dying annually. If the second fundamental assumption is accepted that the rate of band recovery of wild banded birds during successive years is substantially the same as the rate of loss of the wild unbanded portion of the population, the wildlife authority then has an index which serves as a basis for balancing the annual wildlife budget sheet. By this method different portions of the wildlife population, perhaps those inhabitating different geographical areas or those under different hunting regulations, may be compared to determine the effect of the habitat or the regulations in question.

"Whose day shall we spoil today?"

The Alabama hunter certainly has no concept of the volume of information a wildlife biologist can secure from a series of quail wings collected over a period of years. Wings tell a story not unlike that which a forester may read from tree rings or a geologist from a series of varves.

First, most adult game birds can be separated from juveniles at least until the young reach about three months of age; some species can be differentiated until the onset of the following year's breeding period. Examination of a random sample of fall-collected wings gives the biologist an adult-juvenile ratio, which often serves as a rough year-to-year index of the reproductive success, facts important in management.

Second, on most birds so far studied, moulting of wing feathers in young is an orderly and regular process, barring injury. Wing feathers are replaced progressively as the young becomes older, permitting the biologist to approximate the age of any juvenile and therefore its hatching date. Given a sufficiently complete and random series of wings, the peak period of hatching activity can be determined. Curves of hatching intensity throughout the season may be compared annually with weather records, major land-use changes, and among geographical areas. The causes and effects of these factors on the fall population can then be determined. (See article by George Gehrken, this issue, pages 8-9).

The facts relating to hunter kill are extremely useful to the wildlife administrator as an appraisal of the aptness of hunting regulations. The proof of the pudding is indeed in the eating and the kill per gun hour is proof of the breeding and production indices and the regulations that were drawn from them. Workers in Missouri have demonstrated a high degree of relation between spring quail whistling counts and the quail kill per gun hour in the fall. As more hunter kill data accumulates, fall wildlife crop predictions should attain increased accuracy.

Some species are cyclic in abundance, the ruffed grouse, for example, which, on the more northerly parts of its range, increases and decreases in numbers quite regularly during successive decades. Drumming counts, strip censuses and the kill per gun hour are indicators of the onset of the population drop preceding the low of the cycle of abundance and are of concern to the wildlife administrator in making appropriate regulations.

Hunter kill information is of importance in the study of wildlife mortality, to determine that part of the annual mortality which is successfully harvested rather than wasted. The study of all sources of wildlife mortality has not reached the degree of precision desired. Band recoveries of mourning doves, for example, indicate a juvenile mortality of approximately 70 percent, and an adult mortality of about 65 percent of the population per year. Although most of the band recoveries are made by hunting, only about 3 percent of the total banded are ever recovered. Out of a 65-70 percent mortality per year, biologists can ascribe positively about 3 percent to hunter kill. With 70 percent of the population being replaced annually, a hunter take of only 3 percent seems small indeed, and leaves a mortality of about 67 percent which cannot be accounted for.

Part of the unaccounted mortality is, of course, due to failure of hunters to report bands; part is due to birds which are crippled and go unretrieved, and on which

biologists have estimates; part is due to illegal kill; and part may be due to loss of bands after attachment.

To permit a maximum harvest on a sustained-yield basis quantitative appraisals of hunting and other mortality factors are of considerable importance in management. The seasonal period when mortality takes place is also of major importance because it may be possible to substitute hunter kill for other kinds or mortality which are now resulting in wasted birds. In mourning doves, quail, and pheasants, mortality seems to be self-compensating, and to begin operating whenever a population produces more than the habitat can sustain. The quail mortality rate on portions of the quail range not open to hunting does not differ substantially from the mortality rate of hunted quail populations. Studies on Wisconsin quail suggest that mortality may be due to any of a number of agents which begin operation as soon as the summer production has increased the population beyond that which the habitat can carry. In mourning doves, heavy juvenile mortality, part of which was due to disease, occurred during the summers of 1950 and to a lesser extent in 1951 and seemed to be in part compensated for by reduction in hunter success and in hunter effort. Con-

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WHY RESOURCE USE? (Continued from page 4)

sight beyond comprehension.

In southeastern Ohio miles upon miles of unboweled acres greet the train traveler as he passes through the strip mining coal country of a once fertile Ohio valley.

On my recent trip to California and Monterey Bay, I saw the immense sardine canneries of Monterey closed, their machines silenced, their workers gone. Vanished, perhaps forever, are the midnight lights of the fishing fleets, and with them a thriving sardine industry. Cause: too much fishing and not enough reproduction.

There can be many other examples of destruction and they need not be confined to the land. Our damaged water, wildlife, and minerals have been equally heavy.

We Know Now

But there is not too much point in reviewing past shortcomings except as it will help us avoid similar pitfalls in the future. Today we are learning and we are profiting from the lessons of the past. We know now that:

1. Babylon and Mesopotamia and north Africa need not be repeated in America. The very tools that were employed to cut the heart out of America can be used to rebuild it.
2. We are learning to recognize that in the treatment and use of our natural resources we must think in terms of the greatest good for the greatest number, for the longest time.
3. We are beginning to recognize and work for a better understanding of the relationship of all natural resources. There is no such thing as soil conservation or forest conservation or wildlife conservation by itself. All resources must be treated together and treated collectively for what ails them.
4. We are beginning to recognize and work for the principle that if we are to safeguard our basic wealth, we must think of the resource first, and man second.
5. We are learning to recognize that if we are to have wildlife, we must begin to treat it with greater reverence, to treat *all* living things with more dignity, respect.
6. And, we are also beginning to recognize that in the final analysis none of these things can come about without the whole-hearted cooperation of all citizens.

The Wildlife Resource

In our wildlife work, we must keep abreast of times and meet the challenge of the future with an action program aimed at restoration. We must:

1) take the advice of the scientist in our wildlife ills. Just as we seek the advice of a physician when we feel low, so too we should seek the advice of the trained biologist to help solve our wildlife problems.
2) make every effort to cut down on the illegal take. Experience shows that in foreign countries with a much heavier population per square mile they still enjoy considerable wildlife. This is because the illegal take of fish and game has been removed.
3) get more fun from our outdoor pursuits with emphasis on more sport and less meat. Because there is only a limited supply to go around, it behooves us all to get more pleasure out of each piece of game taken. Emphasis must be taken away from killing and placed on other values and pleasures.
4) have more education and less agitation. When the masses of citizens understand the principles and concepts of wise use, then and only then will we be able to swing the pendulum of critical balance the other way.

The greatness of America has been the greatness of her resources and the genius of her people. The vastness of her forests has been equaled only by the dramatic suddeness of their exploitation. The amount of her pure water has been equaled only by the extent of its pollution and poisoning. The magnitude of her wildlife was equaled only by the far-reaching methods employed for its destruction. The richness of her soil resources was surpassed only by the extent of erosion and the siltation of rivers and deltas.

Will history repeat itself in America? It can, but it need not. The forces which have made America great can yet be harnessed constructively to rebuild a finer America. The very genius of inner man that created the greatest empire the world has ever known, but at terrible costs, can yet rebuild a still nobler civilization—a civilization based upon a strong resource foundation, mutual respect among nations, and the freedom of people to guide their own destinies.

Many archers arrive early to explore the hunting grounds and choose a likely deer stand.

Refuge manager John E. Bryant, in charge of the hunt, briefs bowmen on the rules and regulations.

Commission Conservation Officer John B. Nicholson checks special permits and examines the hunting licenses of a group of hunters.

E. F. Knipling spreads soot, from a cooking utensil, on his cheek to dull the face shine.

HOG ISLAND BOW HUNT

To reduce depredations to duck and goose foods at Hog Island on the James River, the Virginia Game Commission opened a special season on deer at the waterfowl refuge.

Raymond Braswell is perfectly camouflaged as he draws a bead from his stand in some reeds.

S. M. Rankin re-enacts dead aim at a deer that he has successfully stalked.

A nice buck, killed by Dr. H. W. Helberg, is being transported to the check station.

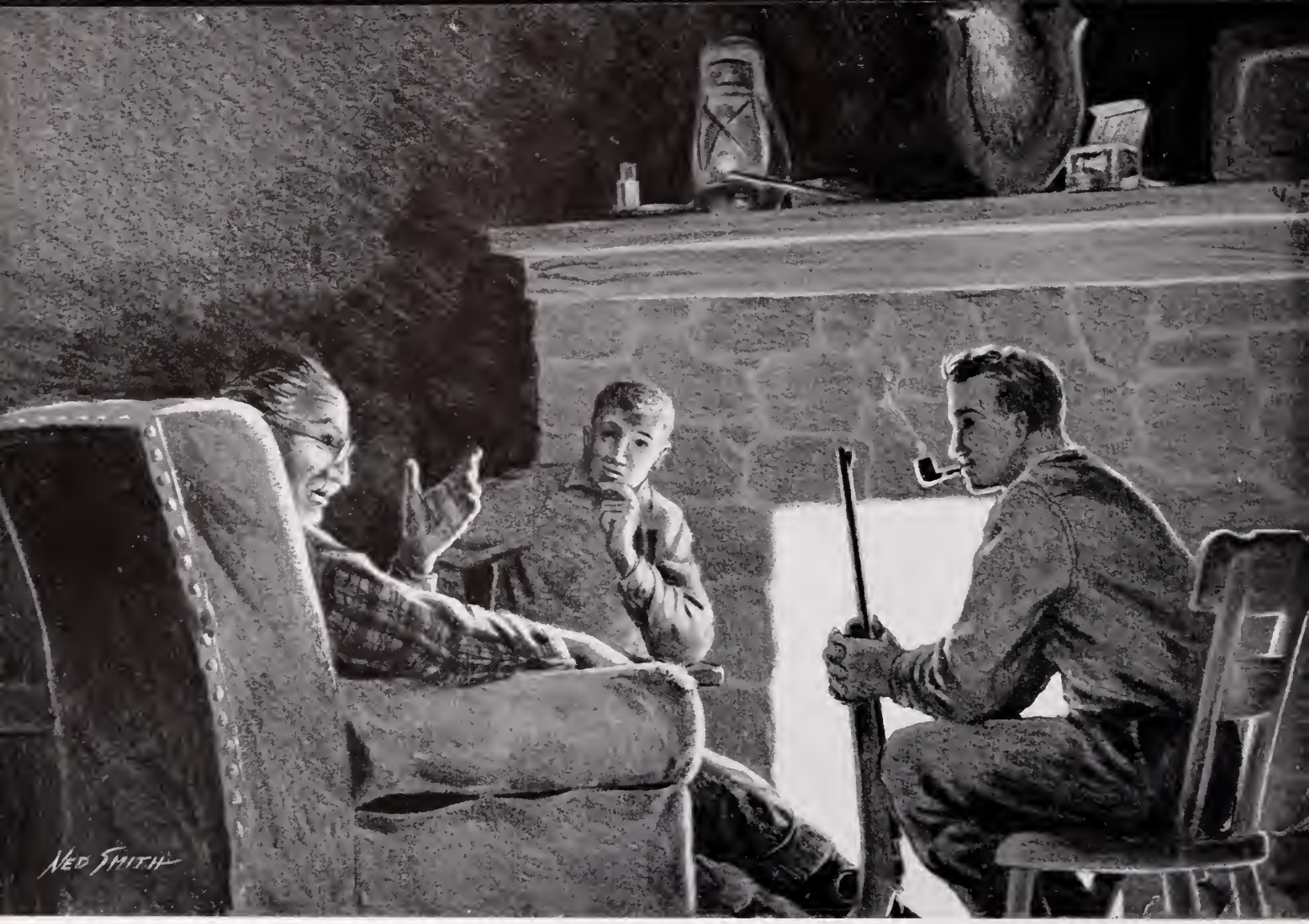
John Bryant and Stuart Davey, Commission deer expert, receive instructions from veteran archers Ribble and Strickland.

Three special weekly hunts were held (October 4-9, October 18-23, and November 1-6), during which time hundreds of Virginia bow hunters had ample opportunity to try out their skill and help reduce the extra heavy deer herd.

Hog Island has perhaps the greatest concentration of white-tailed deer of any area in the east, if not in the entire country.

A total of 33 deer were taken off the island during the special season—not as many as biologists hoped for but still a distinct credit to the William Tell prowess of Virginia sportsmen.

Game Division Chief Phelps and refuge manager Bryant examine traps used to live-trap deer for restocking purposes.



"It wasn't the deer or its rack of meat," Dick said. "It was the gall of that fellow."

FIRESIDE PHILOSOPHY

By C. H. SHAFFER
State Leader, Farm Game

THE three men were huddled around the comforting fireplace in the small cabin which for years had served as the focal point for their hunting trips together. Tom, Dick and Harry—a doctor, plumber and truck driver, respectively, had looked forward to this week ever since the last hunting season, for it was the best part of a busy year for the three of them. They thoroughly enjoyed the companionship, the jesting and the feeling of being close to God and nature when they hunted in the beautiful forests and fields of Virginia.

This night, however, something was amiss; a deep gloom pervaded the cabin and the spirits of its occupants. Dick was especially despondent and his mood affected his buddies after he had related details of his morning hunt. Since sun-up he had been on a deer stand, and during the course of the morning he had heard Harry's pack of black and tans heading for his stand. The thrill of the chase, the wonderful excitement and expectation reached a climax when a magnificent eight-point buck headed for the crossing above Dick's stand. He took careful aim at the front shoulder, fired, and the buck crumbled into the freshly fallen leaves.

Dick held back momentarily while the stag ponderously regained his footing, staggered weakly and clambered painfully through the woods. Expecting the buck to drop again any minute Dick had followed discreetly behind.

He glanced up sharply toward the ridge when he heard three rapid blasts from an automatic, and at that precise moment the deer dropped for the last time, a bare twelve feet from Dick's feet. The crushing of leaves and snapping of branches foretold Dick of the rapid approach of another hunter.

"That's my deer, I got him! I fired the last shot!" the stranger shouted in a belligerent voice. Dick was completely dumbfounded by the unexpected turn of circumstances, and watched silently as the newcomer pulled out his knife and stuck the deer which was Dick's trophy. An unpleasant argument followed, even though an examination revealed conclusively that Dick's aim had been

true. The other hunter had been out of gun range, and had merely clipped the left hind leg of the deer with buckshot. Nonetheless, the boisterous newcomer boldly claimed the deer and dragged him off. To avoid an ugly fight, Dick grimly rounded up Harry's hounds and headed toward camp. When his buddies returned, they had found him sitting with his head in his hands staring dismally into the blazing logs.

Now, later in the evening he was in the same chair and attempting to describe his feelings to his companions.

"It wasn't the deer or its rack or meat," he said earnestly. "You fellows know that I've had more than my share of luck in past years. What got me was the gall of that fellow. I'll bet that right now he's bragging to his neighbors what a remarkable shot he made and what a great sportsman he is!"

Harry was not much help in lightening Dick's despondency. It was obvious that he, too, was in a melancholy frame of mind. "Do you realize, fellows," he began, "that that makes five deer which have been killed over my hounds this week." He poked the fire irritably. "But have I gotten a piece of meat or even a thank you from any of those five fellows? Why, it must cost me three hundred bucks a year to feed those hounds and pay vets' bills, not counting what they cost me originally, or what I've spent training them. I think I've got a gripe coming, too, against these self-named sportsmen."

Tom, who had been sitting quietly, puffing intermittedly on his pipe, joined the conservation. He smiled ironically. "This really has been a sorry day for all of us. I got too cold this afternoon on the deer stand, so I drove on down to Mr. Smith's house to get permission for our annual bird hunt on his farm this Saturday. Wanta know what I found? The whole place was dotted with posted signs. First time I've seen any in the twenty odd years I've been hunting there. Mr. Smith said he was sorry, but refused to give us written permission to hunt. He said there won't be anymore hunting on his land."

"That's a rotten break for us," muttered Harry. "The old boy must be getting crabby."

"No," Tom continued. "After he told me his side of the story I can't blame him one bit. It seems that last fall, some fellow, I forgot his name, but we'll call him A, came and got permission to hunt on Smith's land. He apparently had some luck for the next day he arrived with B as his guest. The following day B brought C and D. From then on until the end of the season there was a constant stream of hunters from A to Z and back again. Smith's three coveys of quail were shot down to a few birds. Worse than that, they bagged that old crooked-toed turkey hen we've spared year after year. She'd hatched out a nice gang of turkeys every year for the last six seasons."

"That's awful," Dick remarked gloomily. "I'm beginning to see the reason for these posted signs."

"But that's not all," said Tom. "Smith told me a number of other incidents, too, about hunters shooting too close to his home and livestock, and about some busted fences. Just because a number of hunters don't know how to act, that wonderful hunting territory will be posted from now on. We'd better plan on leaving Friday evening. There'll be no bird hunting at Smiths, come Saturday."

The men were silent a moment, then Dick murmured half-heartedly. "We can always go fishing on Saturday. There probably won't be anyone else on the lake this time of year."

"Speaking of the conduct of sportsmen and fishing," chimed in Harry. "You fellows should have been along with me last spring on the national forest on the opening day of trout season. I took my boy along to teach him a little something about the thrill of trout fishing and to show him the beauties of the mountains. We located a nice stretch of water below a little waterfall and waited patiently for 12 o'clock to roll around. I went up there to relax, but probably would have been more at ease in a rattlesnake den. It reminded me of the stories of the Oklahoma land rush. Fishermen on all sides were casting over top our lines. Beer cans and brush and paper bags soon floated down that beautiful mountain water. In less than an hour's time six fellows had waded down through the hole where we were fishing and four others came through from the other direction. On the way home Junior told me that he didn't see any fun or sport in trout fishing. Can you blame him?"

Dick, who had been watching the leaping flames, broke the silence which had followed Harry's dissertation on trout fishing. "Look here, fellows, we're not getting anywhere by criticizing the conduct of other hunters and fishermen here among ourselves. After all, there are doubtless many things that each of us does that may not be right in someone else's opinion. I've been doing a lot of thinking since that fellow walked off with my deer this morning. I know that each of us loves his hunting and fishing too much to let a few unpleasant incidents spoil the enjoyment of a favorite pastime. We've got all evening with nothing else to do except talk, so let's analyze this thing we call sportsmanship and find out what the rules actually are. Then perhaps we can figure out ways in which we might be able to teach and demonstrate better sportsmanship to others. Just for the sake of discussion, Tom, what is your definition of a sportsman and sportsmanship?"

Tom thought awhile, then laughingly replied. "That's something like trying to define a lady or a gentleman; everyone has his own opinion. As a matter of fact, a couple of years ago the president of our local Izaak Walton League asked each of the members the same question. Most of the answers varied, but they all included buying necessary licenses, obeying the game and fish laws, practicing conservation, and belonging to organizations that promote better hunting and fishing. But this fellow, this sportsman, we're trying to describe, he does all these things and more. Actually, I guess a sportsman is some imaginary individual that we have placed on a pedestal. He always does the right or honorable thing in all his

(Continued on page 26)

Duck Hunting —

traditional sport of many Virginians

By JOHN H. GWATHMEY

Rod and Gun Editor, Richmond Times-Dispatch

WATERFOWLING in Virginia differs in some respects from that of other states. It is a notable fact that ducks and geese in recent years have been appearing higher up in the streams and on the inland ponds. Waterfowling is no longer confined mainly to the tidewater marshes.

It is still true, of course, that ducks and geese pour into Virginia in the fall, the main migrations of the Atlantic Flyway funneling down through the state. No longer do they come in great swarms that darken the sky, as was the case in Colonial days. But the diminished flights still provide wonderful gunning.

As is generally known among hunters, there are four great migration routes on the continent, the Atlantic, the Mississippi, the Central and the Pacific. The Appalachians form the line of demarcation between the Atlantic and Mississippi flyways, with comparatively limited wintering grounds in Virginia for the great flights of ducks and geese which seek their winter feeding and resting places along the Atlantic.

It still is true that most of the duck shooting is done from blinds, bay, shore, or floating blinds, where artificial decoys and expert calling are depended upon to bring the birds within range. Use of bait and live decoys has long since been outlawed. The blind shooting is similar to blind shooting wherever it is practiced.

In Virginia there is a growing interest in "float" shooting on the streams. Two men in a boat (sometimes only a lone gunner) simply float down and take their shots as the frightened ducks rise from the water. Gunners usually find that the stealthy approach can best be made when the rivers are somewhat above normal flow. The problem in this type of gunning is getting close enough to the birds before they flush.

There is very little "pass" shooting in Virginia, popular in many of the western states and in New England, where gunners station themselves along the accustomed flights of broadbills and scoters. Nor is there the shooting in the pinoak flats, so popular in many of the central states.

There is growing interest in Virginia in "jump" shooting on foot. That is to say the gunners quietly approach ponds and streams where ducks are feeding or resting and get their shots as the birds rise from the water. Surprising numbers of ducks are appearing on the small lakes and even on the very small farm fish ponds.

This "jump" shooting is rather largely confined to Virginia, but is usually done by paddling the winding creeks through the tidal marshes. Unfortunately, a wide expanse of marsh provides shooting for very few gunners, reverberations from the guns scaring up ducks for considerable distances. By many Virginia hunters, this is regarded as the most delightful of all forms of hunting.

Jump shooting has been popular at the distinguished old Virginia clubs for years. They normally start hunting only after the sun has gotten high enough to dispel mist and cold. The gunner sits in the bow of a canoe or other small boat, a robe pulled up over his knees, and an experienced paddler and a retrieving dog in the stern.

The guide paddles silently along the creeks that wind through the marshes with every prospect that there may be ducks on the water at every bend. As a rule more mallards and black ducks than any other species are killed in such hunting. Registers of the old clubs indi-

Pass shooting is a technique whereby a gunner stations himself, with or without decoys, on a point and waits for the ducks to fly by.

photo by Harold M. Lambert

Jump shooting works on the principle of walking up or paddling up on ducks in the marshes or rivers. Here the element of surprise is put to good advantage.

Blind shooting is still the principal type of shooting practiced by most waterfowlers in Virginia as in most other states with large bodies of water.

cate that this form of shooting was particularly popular even in the days when there was no restriction upon blind shooting over bait and live decoys.

The float shooting on the rivers and walking up ducks in the inland areas are growing in popularity with the increase in the numbers of ducks that are seeking the inland waters rather than confining their feeding to the marshes of tidewater. It is nothing unusual for hunters in the upland counties to get their limit of ducks in a day.

The principal problem with blind shooting in Virginia, as elsewhere, is overcoming the wariness of the birds. Many waterfowlers fail to realize that the same birds they are hunting have been shot at all the way from Canada to Virginia in their southward flight. Many of the northern seasons open as early as the first week in October.

There is no duck shooting in the grainfields in Virginia as there is in California where the natural feeding grounds have become so contracted that the birds have to seek food at the farmers' expense. Virginia hunters shoot geese in the fields, but not ducks.

In view of the fact that ducks have every reason to become blind shy before they even reach Virginia, hunters pay a great deal of attention to the construction and location of their blinds, and to the excellence and arrangement of their decoys. A great many hunters are observing rest days, confident that their chances of good shooting are spoiled if a blind is shot on every week day.

It is the belief of many experienced waterfowlers that there are some entire areas in Virginia which have been hurt by the presence of too many blinds and too persistent shooting. Ducks simply abandon such areas even though there may be plenty of natural food available.

Virginia, more than most other states, is affected to a greater extent by the division of the duck species into two distinct classes—the diving ducks and the dipping ducks. As a general rule, the divers such as canvasbacks, redheads, scaups and whistlers are more plentiful on the brackish waters, while the dipping ducks are more disposed to come inland and feed in the shallow marshes where their food may be obtained by simply tilting up and taking it from the bottom.

Hunters for the diving ducks—which normally come in later than their kinsmen—generally feel that it is wise to put out large numbers of decoys, while hunters in the marshes usually feel that it is unnecessary to put out more than a few well-placed blocks. Concealment when ducks are in sight is all important. Generally speaking the divers are easier to bring in than the marsh ducks.

In the days of the Jamestown settlement there were several species of geese which annually visited Virginia. There also were vast numbers of wild swans. At present, the Canada goose is the mainstay of goose hunting, and is the only species which comes into Virginia in numbers which can be legally taken, with the exception of brant, which are building up in numbers.

Canada geese are hunted both from blinds on the water and in the fields, with a majority of the annual bag taken in the grainfields where the geese come in great flocks to feed. A corn shock or a bush on the edge of the field is usually all that is needed for concealment. Decoys are set out where the flocks are accustomed to feed, and sometimes the shooting is a very remarkable experience.

Canada geese, as well as the ducks, have been shot at consistently before they ever arrive in Virginia. The Canada geese are wary birds from instinct. Their eyesight is extremely keen. Most goose hunters preach the doctrine of remaining completely motionless until the geese are in range, for the slightest movement on the part of the hunter will be detected.

Duck and goose hunters probably make more preparations in the off seasons than any other classes of hunters. In many cases they spend a great deal of money in pursuit of their sport. Many of them find delight in fashioning their own decoys, practicing their calls, and dreaming about waterfowling long before the seasons open for legal shooting.

The authorities indicate that populations of both ducks and geese in the Atlantic Flyway have been building up slightly in numbers in recent years, but the populations are nothing like what they were a good many years ago. The solace of a great many hunters, if they take it that way, is that they normally see many more waterfowl in the distance than they induce to come within gun range.

Women's interest—and influence—in wise resource use can be a potent force in the conservation movement.

CLUBWOMEN AND CONSERVATION

BY EDYTH WILLS
Conservation chairman, Lynchburg Women's Club

AT A RECENT meeting of the Virginia Federation of Women's Clubs, I was astonished to learn that a very small percentage of the member clubs had a conservation department on their roster of yearly programs. Nevertheless, the favorite speaker of the three-day session was the gentleman whose subject was "Womanpower, The World's Greatest Undeveloped Natural Resource."

It has always seemed to me that the tenet and practices of conservation should have an especially strong appeal to the feminine mind and temperament. From the beginning of humanity, women have been the conservers and preservers of the resources of the earth—the great Mother Earth—root of all material productiveness. Women are the understanding and beneficient protectors of wildlife. American women are descendants of pioneer and pilgrim women, who from their use and management of the plenteous raw resources of the land, helped build this great and wealthy nation.

Unfortunately, mismanagement and thoughtless waste were also factors in the process of development and we are now reaping the effects of the causes. This is where WE come in, expressing it in the vernacular. Unlike our forefathers, we cannot plead ignorance as an excuse. Countless articles, books and arresting speakers have shown us the critical importance of conservation in our daily lives.

President Eisenhower in his inaugural address, said that the keynote of this second half of the 20th century is SURVIVAL. Not the survival of ideologies, or of powers, but economic survival upon which life itself depends. On October 11, 1953, a prolonged drought impelled Governor Battle to designate that week as a time for Virginians to give special thought, attention and practice to the conservation of the soil. Our Lynchburg "hills of home" are presently in the grip of a relentless dry spell, with even the hardiest ground covers like periwinkle and spurge wilting away in the shade. Mulch and light working are nursing along the more delicate or most prized plants.

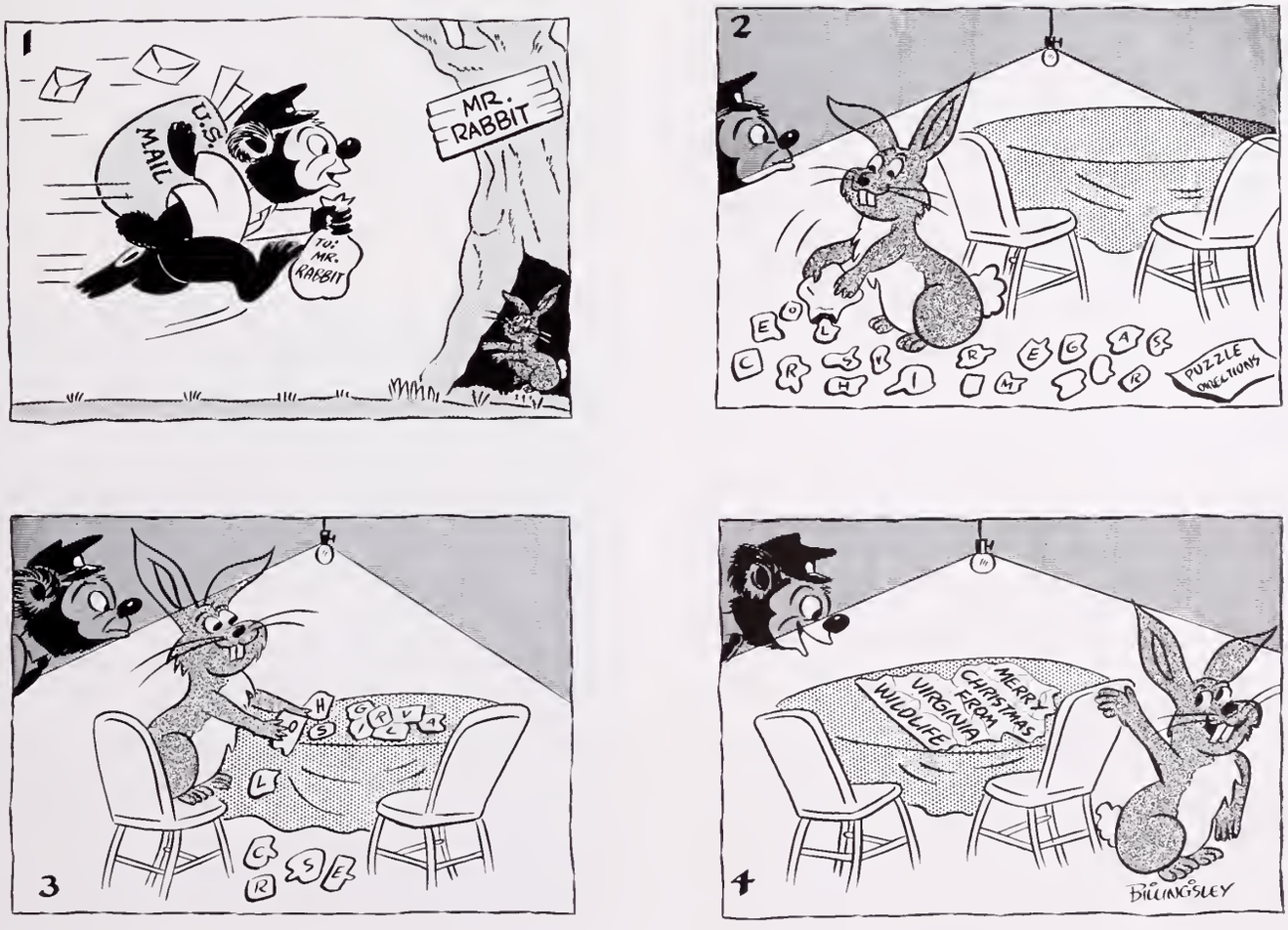
On a visit to New York City not so long ago I encountered a number of discomforting regulations to conserve water because of the growing shortage. My thoughts reverted to hair-raising accounts of the crippling damage that the bombing of one dam in each of our three largest cities by an enemy would mean in the rapid conquest of our country. We could employ present time and efforts to better effect, supporting and working for soil and water conservation alone, rather than worrying about the probability of destruction from a foreign enemy.

Women have been and must ever be the salt of the earth in the sense that salt is the premier element of preservation and conservation, with the added spice of that feeling of satisfaction, security and enjoyment that comes to us with the knowledge of resources and possessions that have been put to the best possible use. If women neglect to uphold their role in this respect, it will be like the parable in the Bible about the salt having lost its savor and become useless, with the lack and inefficiency spreading into ever-widening circles of loss. Note that salt is an active agent. We are all against wastefulness and mismanagement, but that is not enough. We must be FOR conservation, actively, all-out. Sugar coating, an inactive agent, soon dissolves, and what have we?

We have developed mechanical, technical and scientific devices to the highest degree, while neglecting to protect and conserve natural resources. Fortunately, it is fundamentally true that it is a poor rule that will not work both ways. We can, in turn, call upon scientific and technical methods to help conserve renewable natural resources. Some super-optimists have responded to the drive for the conservation of natural resources with the statements that atomic power (in place of water power, coal and gas fuels, etc.) and ersatz or synthetic substitutes will eventually fill the gaps left by our failing resources. This is wishful thinking of the comic book order. Make no mistake, the fundamental elements of soil, water, woods and wildlife, will always be the basis of economic progress and civilization. They should endure as long as this giddy old sphere, the world itself, as was no doubt intended, with proper control and disposition.

Club programs and forums have resulted in much civic betterment, but there are some projects and problems that cannot be pursued gregariously only, if they are to show best results. Each worker must meet the challenge alone, and contribute in her own way. Undergoing a slight exposure to hard work is one of the best ways I know. I know from experience that many of us make the mistake of spreading ourselves too thin, with too many different projects. Concentration on a few of the most critical and important is infinitely more rewarding. Conservation should have top priority.

Clubwomen are a keystone in conservation interest and development. Here is the younger generation to be won to our causes, to be instructed by our precepts and examples. Women are the trustees of posterity. The destiny of America depends on the opinions, beliefs and practices of our younger generation, just as our economic progress and survival depends upon successful conservation throughout the land.



Virginia Minerals, A Source of Wealth*

By C. C. FISHER

(Virginia Chamber of Commerce photos by Flournoy)

ALTHOUGH few of us think of Virginia as a mineral-producing state of importance, since 1947 the annual value of Virginia's mineral production has been greater than $100,000,000. In 1952, the last year for which records are available, this value reached $165,000,000 placing Virginia about 20th among the 48 states.

What is a mineral? According to a common geologic definition, a mineral is a natural inorganic substance having, within limits, definite chemical and physical properties. Thus coal and petroleum, for example, are not minerals, but they are considered among the mineral resources of a region.

Many different mineral resources contribute to the mineral production of Virginia. Each of these minerals is found only in environments conducive to its formation or accumulation. Many of the metals are most likely to occur in igneous rocks, that is, rocks which originally were molten. Certain other minerals, such as coal or petroleum, more typically occur in sedimentary rocks, those deposited by water, wind, or ice. Then there are minerals, talc and kyanite for example, which commonly are found in metamorphic rocks—rocks which have been altered by heat or pressure after their original deposition or emplacement.

Besides restriction to specific kinds of rocks, there are variations in environment of occurrence. To further complicate the picture, many minerals have several different modes of occurrence, but usually one more common than the others.

This general restriction of a given mineral to one kind of rock or one environment is well illustrated in Virginia by the geographic localization of many of the commercial mineral deposits. Igneous, metamorphic, and sedimentary rocks are not scattered indiscriminately throughout the state but rather are arranged in a fairly definite pattern. In general, east of Richmond, in the Coastal Plain, unconsolidated sedimentary rocks—sand, gravel, and clay—predominate. From Richmond west to the Blue Ridge (the Piedmont area), and in the Blue Ridge itself, are igneous and metamorphic rocks. West of the Blue Ridge, in the region geologists call the Appalachian Ridge and Valley province— generally speaking, the Valley of Virginia—are sedimentary rocks again, but different from the sediments of the Coastal Plain. Here the rocks are mainly limestones, dolomites (limestone containing magnesium), shales, and sandstones. So as would be anticipated, in the Coastal Plain are found some of those minerals usually associated with unconsolidated sediments; in the Piedmont and Blue Ridge the mineral wealth is normally that of metamorphic and igneous rocks; and in the indurated sediments of the Valley are commercial deposits of both metals and nonmetals.

It must be realized that simply because a given mineral commonly occurs in coarse-grained igneous rocks, for example, it will not be found wherever there are such rocks. Further, not all deposits of valuable minerals are amenable to profitable exploitation, due to various geologic, geographic and economic factors. Finding a *commercial* mineral deposit requires exploration in the proper kind of rocks or depositional environment and in a geographic location which favors subsequent economic development. Despite the complications of successful exploration, Virginia has commercial deposits of many different minerals.

Virginia's main mineral resource, accounting for about 65 cents of every dollar of mineral production value, is coal. Since 1908, more than $1,500,000,000 worth of coal has been mined in the state. Of the approximately $165,000,000 value of minerals produced in Virginia in 1952, about $115,000,000 was contributed by coal. Over 95 percent of Virginia's coal resources are in the southwest field. Supplies are ample to last more than 500 years at the present rate of production. Clearly coal, with its ever-widening range of uses, is and will continue for some years to be Virginia's most valuable mineral resource.

Virginia is one of the leading lime-producing states. Plants and animals —including man—can't do without this important mineral.

*Published by permission of the State Geologist.

Coal mining is a source of wealth of the people of southwest Virginia. Timber and wildlife resources come next.

Though not a true mineral, coal is classed with the non-metals and constitutes the most important product mined in the state.

Limestone and dolomite, next to coal, constitute the main mineral asset of Virginia. The geologist calls a rock largely composed of calcium carbonate ($CaCO_3$) limestone, whereas dolomite is a closely related rock in which magnesium takes the place of some of the calcium. In the Valley of Virginia are great quantities of both limestone and dolomite. Much limestone of the quality desired by the chemical industry for lime (CaO), used extensively as a reagent, is found in the Valley, and Virginia is one of the main lime-producing states. The treatment of depleted soils with lime is being practiced more and more widely. Limestone is also used in building, as crushed stone for a variety of purposes, in glassworks, as a blast furnace flux, in water purification plants, and in many other ways.

Such prosaic materials as sand, gravel, and clay are counted among the mineral resources of Virginia. All of these are common in the Coastal Plain and in localized areas elsewhere in the state.

Natural mineral raw materials such as marl (a mixture of clay and limestone) or limestone and shale are used by the important cement industry of the state. Virginia is in a good position with respect to the necessary raw materials for cement manufacture.

Pyrite and pyrrhotite, both sulfides of iron, are found in the Piedmont of Virginia and are mined for their sulfur content. Thus they are considered non-metallic resources. These sulfides are very important, for sulfur is perhaps the most vital of the chemical minerals. Sulfur is used mainly in heavy chemicals, fertilizer, insecticides, and pulp and paper. The sulfur used in heavy chemicals is largely converted into sulfuric acid, which finds application in fertilizers, oil refining, chemicals, rayon, film, paint, and pigments.

Virginia contains many other minerals which, although mostly of less dollar value, are of importance to the economy of the local area in which they are found. These include soapstone and talc, kyanite, mica, feldspar, aplite, salt, and gypsum. Virginia also produces small quantities of petroleum and natural gas, largely in the southwestern and western parts of the state.

Two other mineral resources, although not commonly thought of as such, are ground water and soil. They are not found everywhere, and even where found may not be proper quality to be useful.

Thus far only the nonmetallic mineral resources of Virginia have been considered. These contribute considerably more than 90 percent of the mineral dollar of Virginia, but nevertheless there are some valuable metallic deposits in the state.

Virginia has large deposits of zinc and lead. Easily the largest developed metallic resource in the state is the zinc and lead deposit near Austinville in Wythe County. Here zinc is the more important, with lead being recovered as a by-product. Zinc is used in galvanizing, die castings, brass making, and as rolled zinc for various purposes. Lead has a wide variety of uses, particularly as pigment in paint and flint glass, as cable covering, in storage batteries, and in tetraethyl lead.

The presence of iron ore in Virginia has been known for centuries. Once iron was mined in large quantities in the state, but with the development of large deposits elsewhere, Virginia production is now small. Nonetheless, there is much iron ore in the state, which with the depletion of high-grade ores from other localities may again assume considerable economic importance. The main deposits of iron ore in Virginia are found in the region west of the Blue Ridge.

Two additional metallic resources of Virginia should be mentioned—titanium and manganese. Titanium is extracted from the minerals ilmenite ($FeTiO_3$) and rutile (TiO_2). For many years most of the world's rutile supply was obtained near Roseland in Nelson County. Ilmenite has been mined in Virginia along Piney River, in Amherst and Nelson counties. Other Virginia counties also have titanium ores.

The potential importance of Virginia's titanium is hard to exaggerate. Titanium is one of the most strategic-

ally necessary of all metals, yet the United States imports almost all the titanium consumed domestically. In various forms titanium has been used for years, as a pigment in paint (making the whitest paint known) and as a ferrocarbon titanium alloy with steel (making the high-speed steels so desirable today). Only recently, however, has metallic titanium been produced in commercial quantities. It is light, strong, and extremely resistant to heat and corrosion, thus constituting an ideal material for jet aircraft.

Manganese, found in many places in Virginia, is the most important of all the ferroalloys—those metals which are used for alloying with iron to yield steels of certain specific properties. Manganese is absolutely essential to the making of all carbon steel, about 13 pounds of it being needed per ton of steel produced. Manganese steel is used where hardness and toughness are desired. Inasmuch as the Soviet Union produces about half the world's total supply, and the United States is not rich in manganese, the potentiality of the Virginia deposits is of much interest.

Even a necessarily cursory discussion such as the above shows clearly that Virginia is fortunate in her natural endowment of mineral resources. Further exploration will no doubt uncover new mineral wealth, and technologic advance will disclose uses for minerals not of commercial importance today. For Virginia to receive the fullest benefit from these resources, a thorough knowledge of the geology of the state is of vital importance.

FIRESIDE PHILOSOPHY

(Continued from page 19)

outdoor activities. He is unselfish, thoughtful, honest, considerate. . . ."

Harry suddenly interrupted. "Tom, you just gave me an idea. You reminded me of Junior with his fingers in the air repeating solemnly the Boy Scout code, 'A scout is courteous, kind, obedient and so forth.' Why shouldn't hunters and fishermen be required to learn and practice a code like the scouts?"

You can't legislate basic conduct," retorted Dick. "Those qualities will have to be stressed more in the churches, schools and homes. It's actually going to depend on those of us who enjoy the out-of-doors to help demonstrate and educate toward better sportsmanship."

Tom hesitated awhile before speaking, apparently in deep concentration. Finally he said, "It seems to me that we are getting very close to the solution, fellows. The Golden Rule that we were all taught as youngsters applies pretty generally to all human conduct, whether it be in public gatherings, on the city streets, or in the field. If we all think a bit before acting and try to treat our hunting and fishing companions, as well as the landowners, in the manner in which we would like to be treated, our sport would become more gratifying. I've always contended that a man's true character shows itself when you hunt or fish with him."

"In addition to the human contacts," Harry continued the train of thought, "I believe that any code of ethics for sportsmen should include fair play and a consideration for the animals and birds that we are attempting to bag. The sportsman that I would like to idealize does not shoot quail on the ground, rabbits or squirrels in their nests, or ducks on the water."

The men thoughtfully watched the last flickering glow of the dying fire. Then Dick smiled for the first time that evening. 'Fellows, I feel better already since we've analyzed this thing; we've got to remember that there's still a lot of good in the world. Let's each of us make a pledge here and now that when we get home we will do all in our power to formulate a code of ethics for the sportsmen in our communities and to try to educate our hunters and fishermen to follow the sportsmen's Golden Rule."

BANDS, WINGS, BAGS

(Continued from page 15)

tinued assembly of factual data from banding, wings and hunter bag checks eventually will contribute to greater understanding of mortality factors operating in wildlife and result in improved management.

The facts already at hand suggest a reappraisal of some of the time-worn concepts of conservation. Most wildlife populations exhibit rapid rates of turnover, of population replacement. State fish and game departments and the Fish and Wildlife Service have recognized this principal and are now gearing hunting regulations and annual harvests to the crop at hand through improved annual breeding and production counts. Many sportsmen have not kept pace in their thinking and insist on "saving some quail" for their grandchildren. With an annual mortality approaching 80 percent of the young of the year, it is doubtful if present hunting regulations would be a major factor in the quail supply two generations hence, so long as the population is not overshot. *The only safeguard, beyond prohibition of overshooting, lies in developing and maintaining year-round habitat necessary to sustain a high level breeding population and assurance for adequate reproduction and maximum survival of young at least to the harvesting season.* This is the broad objective of all studies of wildlife mortality, whether the data be gathered through band recoveries, the aging of wings, or the checking of hunter bags in the field. More accurate definition of the quantitative and seasonal aspects of wildlife mortality will point the way to better regulations for the harvest and assure perpetuation of wildlife in the public interest for generations to come.

So if you get a letter from the Fish and Wildlife Service asking about your success as a duck hunter, or are asked to send in wings, or are checked in the field by a Virginia conservation officer, you are being contacted to improve your sport. Wildlife is a crop of the year and of the years to come; bands, wings and bags contribute the facts for its sustained management.

Field Force Notes

Big Bass Caught Near Charlottesville

Photo by Bob Tenney

A 12-pound bigmouth caught by John Fisk of Charlottesville.

Game Warden J. Grayson Johnson, of North Garden, Albemarle County, has sent in a story, backed up by a photograph, of a 12-pound bass which John Fisk, who lives near Ivy, pulled from a private fishing lake at Red Hill, Virginia.

The big fish, caught with a jitterbug plug, is one of the biggest ever caught in the area.

Cold Spring Pond Rodeo Biggest and Best

Conservation Officer T. J. Starrett reports that the fifth annual Fishing Rodeo at Hollar Bowman's Cold Spring Pond above Timberville was the biggest and best ever, with 220 boys and girls competing for 12 fine prizes donated by the Rockingham Game and Fish Association and Better Fishing, Inc.

The contest was limited to Harrisonburg and Rockingham boys and girls under 16. It was sponsored by the city of Harrisonburg and the local Izaak Walton League chapter.

Not only were there 50 more participants this year, but more and larger fish were caught: 16 bass 10 inches or over and 34 bream or sunfish. M. W. Trenary, of the Izaak Walton League was general chairman and Wildlife Technician Lem Richards, of the Rockingham Game and Fish Association, chairman for that organization.

Mayor Laurence L. Loewner, of Harrisonburg, presented the prizes. The four top prizes were fishing kits consisting of a Shakespeare glass rod, a reel and a nylon line, donated by Better Fishing, Inc. First prize winner, the boy who caught the largest fish, was Bob Bailey, 12, of Harrisonburg, with a 12½ inch bass. Prize for the girl who caught the largest fish went to Peggy L. Shults, 6, of Elkton,

Photo by Bill Garrard

Fishing rodeo group at Cold Spring Pond.

for an 11¾ inch bass. Prize for the youngest boy catching a fish was won by Terry Bowman, 8, of Harrisonburg, who also caught the third largest fish. Linda K. Lemons, 6, of Elkton, got the prize for the youngest girl to catch a fish.

Presentation to Charles D. Andrews

Chairman of the Commission of Game and Inland Fisheries Beverley W. Stras, Jr., presented a silver ice bucket to Charles D. Andrews of Suffolk on the occasion of his retirement and in appreciation of his faithful services to the Commission.

Retiring Commissioner Andrews is presented an ice bucket.

The Commissioners, with Executive Director I. T. Quinn and Assistant Executive Director Evelyn P. Rueger met in the Hearing Room of the Commission in October to make the presentation.

A Really Remarkable Rack

S. H. Mitchell, Hampton City game warden, has sent in the photograph of an exceptional deer trophy killed in York County near Cheatham Annex of the Naval Mine Depot, not far from Williamsburg, by a serviceman stationed at the depot. J. E. Lestor of Lee Hall, Virginia, was the taxidermist who mounted the head of this buck with the remarkable rack.

Unusual deer trophy.

Wildlife Federation Holds Successful Convention

The Virginia Wildlife Federation held its third annual convention at Narrows, Virginia, on October 9 and 10 and a successful meeting took place. The host club was the Gicova Wildlife Association. Close to 100 delegates and guests were registered at the MacArthur Hotel.

Saturday's program included a tour of local deer country, Mountain Lake, and New River. The evening banquet program was highlighted by a notable address by Claude D. Kelley of Alabama, president of the National Wildlife Federation. Music was by The Ambassadors.

The Sunday morning session was taken up by an executive business meeting. J. J. Shomon of the Virginia Game Commission was speaker.

New officers elected for the coming year were E. Floyd Yates of Powhatan, president and national representative; Col. R. L. Gibson of Covington, vice president; J. H. Adams of Richmond, vice president; Bill Newsome of Bayside, executive secretary; L. R. Gardner of Norfolk, treasurer.

Huge Sturgeon Caught in Appomattox

Gorman Lee, of Petersburg, was a surprised fisherman when he hauled in a 200-pound sturgeon from the Appomattox River, in the Sunken Island section, about halfway between Petersburg and Hopewell. The fish, valued at between $150 and $200 is believed the largest caught in that part of the Appomattox in recent years.

Fight to Save Cypress Swamp of Sunshine State

Word comes from Ernest A. Taylor, former Virginian who is now a resident of Tampa, Florida, about the vigorous fight being waged in the Sunshine State to save the few remarkable museum stands of magnificent bald cypress trees, lords of the southern swamps and brother to the biggest tree in the world, the Mexican cypress (*Taxodium mucronatum*).

Valiant effort is being made to establish a museum stand of virgin bald cypress country in Florida's Corkscrew Swamp in southwest Florida. A private conservation association was established, the Corkscrew Cypress Rookery Association, with the main objective of raising funds and preserving a small tract of wild cypress country as a "permanent public educational exhibit." The area under consideration is a tropical wildlife paradise, according to Mr. Taylor.

"We'll point in opposite directions and see what he does."

It's Official Now

The rainbow trout has been made the official state fish of Colorado. A strong competitor was the native cutthroat, but the Game Commisison favored the state's most popular fish, the rainbow.

Rare Trumpeter Swans Gaining Ground

The rare trumpeter swans, nearly extinct in America 50 years ago, now number 642 birds, according to the United States Fish and Wildlife Service. This year's census, conducted recently by the Service and the National Park Service, shows a gain of 65 birds over last year's count.

Most of the swans were counted in federal refuges and parks. In national and wildlife refuges in Montana there were 380 birds and another 99 in national parks in Wyoming.

The swans were given limited federal assistance in 1907, when small flocks were discovered at Red Rock Lakes in Montana and in Yellowstone Park. Federal protection by law, which imposed penalties, became effective in 1924. In 1935, when only 73 trumpeters were on the roster, the Red Rock Lakes Refuge was established and the general program of protection was made more effective.

Bear by the Tail

Dr. Henry S. Mosby sends news on the cooperative long-range investigation on the black bear in Virginia. Bear hunting is rapidly increasing in popularity in the state and these studies, of which tagging is but one aspect, are designed to supply information needed to manage this game animal.

"If you see black bear running around in the woods with ear tags," writes Dr. Mosby, "don't blame your eyesight; it's a fact. Two bear have just been live trapped, ear tagged and released on the George Washington National Forest. In addition to ear tags, both bear had their faces smeared with red paint—just to add to the visibility of the bear should they come close to humans."

Photo by Henry S. Mosby

Tagging a bear's ear is no simple task.

"These two male bear were ear tagged," explains Supervisor A. H. Anderson of the George Washington National Forest, "as part of a current investigation of the clown of the forest. We want to know how far bear travel and this cannot be definitely shown until we have marked individuals."

The two male bears were captured on the Big Levels Wildlife Refuge near Waynesboro in a huge box trap which resembles a mammoth rabbit trap. They were baited into the trap by means of honey and, once inside, they were anesthetized by means of ether injected into the tightly closed trap from spray guns. After the animals were put to sleep, graduate students W. H. Taylor and D. E. Cantner, both of the Virginia Wildlife Research Unit at Blacksburg, Virginia, gingerly opened the front sliding door, tagged the animals and smeared their faces with red paint.

Now that the technique of trapping and ear tagging has been worked out, plans are afoot to mark additional bears next spring. Anyone who is game to grab a bear by the tail and ear-tag him is invited to offer his services to the wildlife folks.

Virginia Dianas Get Their Deer

Of the 33 deer bagged by archers during the special bow and arrow hunting season for deer on Hog Island State Waterfowl Refuge in October and November, two were brought down during the first week by feminine hunters, Miss Pat Hamilton, of Glen Allen, and Mrs. Priscilla Still, of Norfolk.

Miss Hamilton, who got her spike buck at 30 yards with a 52-pound laminated lemon wood and fiber glass bow, is a member of the Richmond Archers who has progressed rapidly, from third place in her first tournament to first place successively in novice, archer, bowman and expert classes to the climax of women's championship of the state. Her sister and brother are also bow-hunting enthusiasts.

The only archer at Hog Island to bag two deer was Roscoe Reams, of Atlanta, Georgia, president of the Chattahoochee Bow Hunters. His 170-pound (dressed out) buck was the heaviest taken during the three weeks.

A husband-and-wife team, James H. and Priscilla Still, of Chesapeake Beach, each brought down a buck during the first week.

James W. Hill, of Richmond, bagged the buck with the biggest rack, eight points. He and Pat Hamilton are both members of the Richmond Archers.

Other lucky bow-hunters were Ray Braswell, of South Hill; Robert DeButts, of Waterford; A. B. Cole, of Norfolk; W. B. Coleman, of Norfolk; R. L. Green, Colonial Heights; W. H. Kriete, Tappahannock; Dr. Helberg, Warwick; Colonel Ingold, Arlington; Robert Martin, Suffolk; Archie Moseley, Arlington; Clarence Lankford, Warwick; L. W. Nash, Norfolk; Alva Nye, Jr., McClean; Joe Parker, Norfolk; Clifford Rasche, Arlington; Ray Russell, Charlottesville; Jim Strickland; Norfolk; Carter Wall, Disputanta; R. E. Woodall, Warwick.

Hurricane Hazel plus a few other bouts with bad weather helped keep the total down below the number hoped for by game technicians, but the island still offered the best bow-hunting in the state. When it is realized that the total number of deer killed by archers in the whole state of Pennsylvania last season was 84, the total of 33 deer killed on one 2000-acre island during this special season looms a lot larger.

Bow-hunters found much to their liking also in the camping facilities and hospitality of Hog Island and a great many have expressed their appreciation for Refuge Manager John Bryant's helpfulness to the hunters during their stay.

Watch Those Broadheads!

The Quaker State has had its first bow and arrow casualty report. An archer with 18 years' hunting experience tripped as he was climbing over a brush pile and the arrow he was carrying in his bow was driven into the calf of his leg.

The rest of the near 15,000 archers who obtained licenses for the special bow-hunting season in Pennsylvania this autumn came through unscathed, though with less hunting success than last year.

INDUSTRY'S STAKE (Continued from page 9)

servation leaders, plan tours and field days for company personnel and customers, for representatives of industry and business, women's groups and others.

5. ***Promotional activities.*** Provide well-informed speakers on conservation for urban and industrial programs, sponsor public speaking contests, prepare informative leaflets and brochures featuring conservation, cooperate with other industries in presenting a common front, take out affiliate memberships in local soil conservation districts, the Izaak Walton League, the Soil Conservation Society of America, local Watershed Development Associations and other recognized groups concerned with resource use and conservation activities.
6. ***Treatment of company-owned land.*** Where necessary, seek the cooperation of the local soil conservation district technician or state game commission representative for assistance in the development and application of suitable land, water, forest and wildlife programs.

Let us not delay our efforts but rather accept our share of the responsibility by becoming a real partner at local and regional levels. This must be done now for tomorrow may be too late.

Wildlife Questions and Answers

Ques.: **What is the smallest mammal in Virginia in respect to weight?**

Ans.: The pigmy Shrew (*Microsorex hoyi winnemana,* Preble) is the smallest in respect to weight. A type specimen from Fairfax County had a total length of 78 millimeters. It is one of the rarest as well as the smallest of eastern mammals and weighs less than a dime. These tiny creatures, as well as our other shrews, are very nervous and easily frightened to death by the shock of sharp noise or sudden movement. Their tiny bodies burn up food with amazing rapidity and therefore they must consume a volume of food more than equal to their body weight every 24 hours. Insects make up a large part of their diet and they belong to one of the very few groups of mammals which do not conllict in any way with the interests of man.

Ques.: **What's wrong with the Shenandoah River? There are plenty of smallmouth bass, the little ones, but where are the two, three and four pounders that should have resulted from the little fish we were catching and releasing five years ago in the same water?**

Ans.: It is difficult to make any positive statement as to what is wrong with any particular body of fishing water. However, the smallmouth bass in the Shenandoah need time to recover from the serious pollution condition which has only been abated in recent years. Under normal conditions, the smallmouth bass is not a fast-growing fish, taking roughly three years to reach the 10-inch size, 4 years to arrive at the 12-inch size and five years to get between 15 and 16 inches. Another angle to be considered is that the lunker size fish is not too common in any body of water. The problem in the Shenandoah could be fishing pressure, but that is unlikely. There may be too many fish and consequently stunted or slowed rate of growth. The few big fish are probably larger fish that have worked up from the Potomac.

Ques.: **Are weasels entirely destructive or do they have any value to farmers?**

Ans.: Individual maranders have given all weasels a bad name as poultry vandals, but actually weasels as a group are beneficial to farmers, since their diet is mainly made up of mice and rats. They also eat frogs, insects, snakes and, occasionally, birds and rabbits.

Ques.: **What is the bag limit on wild turkeys?**

Ans.: In counties which have an open season on turkeys, the bag limit is 1 a day, 2 a season, except that in Alleghany, Augusta, Bath, Botetourt, Fauquier, Frederick, Highland, James City, New Kent, Page, Rockbridge, Rockingham, Shenandoah and that section of Amherst and Nelson counties lying within the National Forest area, the limit is 1 a day, 1 a season.

Ques.: **Is the common barnyard pigeon protected by the game laws of Virginia?**

Ans.: No, these pigeons are not protected by law.

"Just three more trips and then we can rest until after the hunting season."

Ques.: **What is the purpose of live-trapping and tagging bears?**

Ans.: Trapping and marking these animals may give us broader knowledge and more definite information on the movement of these animals in the mountains. The life span of the bear can be determined if the hunter will return the tag to the Game Commission.

Ques.: **What is the principal wild duck in the world?**

Ans.: The adaptability of the common mallard has made it the chief wild duck of the world, for it will breed almost anywhere il unmolested and readily adapts itself to civilization.

Ques.: **May squirrels and rabbits be killed by a landowner on his own property at any time?**

Ans.: If they are doing him damage, he may with a permit from the game warden have them killed and such person doing the killing be designated therein on the permit. Sunday is a rest day and no wild bird or wild animal can be taken on that day. For any other hunting on his own property, the landowner must conform with the season and bag limits.

Ques.: **What makes burs stick so tightly? And what's the reason for it?**

Ans.: Burs are equipped with hooks on the end of the "needles" or with backward pointing barbs along their sides. Burs contain seeds and they attach themselves to passing animals, enabling the seeds which are not themselves mobile to be scattered over a wide area. Seeds equipped with fluffy parts that make them wind-blown seem, however, to have an advantage over burs in the struggle for existence.

Ques.: **What is the charge for a permit to collect bird specimens?**

Ans.: There is no charge for a permit to collect specimens of wild birds, their nests, eggs or young, in limited quantity, for scientific or museum purposes, but such permits may be issued only to persons of known scientific attainment in ornithology such as a teacher of ornithology or the agent of a public museum.

Ques.: **The pupils in my class took much interest in the article, "Green Gold in Them Thar Hills." They want to know the name of a company that will buy the roots.**

Ans.: There are advertisements in nearly all the major outdoor magazines, especially in *Fur, Fish and Game* of Columbus, Ohio. In the mountain areas, most any country store buys or can give you name of a buyer and many drug companies in the city also buy roots.

Ques.: **At what time of year are the new game regulations decided?**

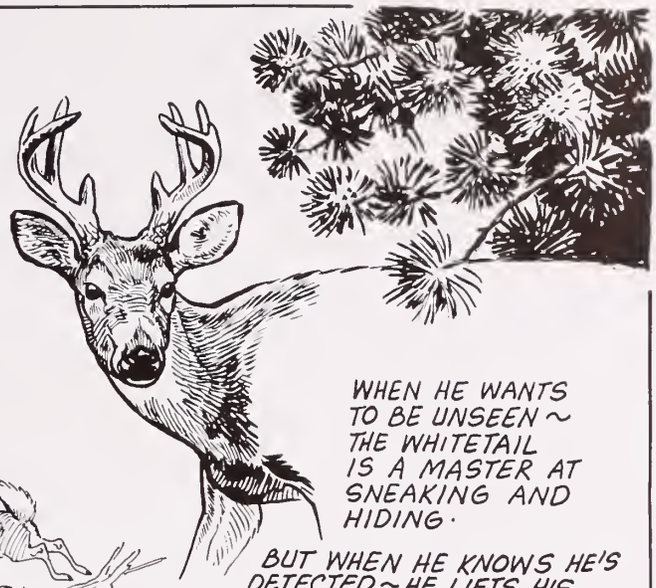
Ans.: The Commisison of Game and Inland Fisheries considers game law changes at its meeting in March each year and the proposals are acted upon at the following Commission meeting in April.

Ques.: **What is the regulation pull weight of a hunting bow?**

Ans.: The minimum weight for a hunting bow for men is usually 15 pounds.

WHITE-TAILED DEER

THIS DEER IS THE MOST PLENTIFUL BIG GAME ANIMAL IN AMERICA. IT PREFERS THE WOODLAND EDGES, AND HAS LEARNED TO THRIVE IN AGRICULTURAL AREAS.



WHEN HE WANTS TO BE UNSEEN ~ THE WHITETAIL IS A MASTER AT SNEAKING AND HIDING.

BUT WHEN HE KNOWS HE'S DETECTED ~ HE LIFTS HIS TAIL LIKE A BANNER AND TAKES OFF ~ THE WHITE "FLAG" ADVERTISING HIS IDENTITY.

DOES HAVE ONE FAWN THE FIRST BREEDING YEAR ~ NORMALLY HAVE TWINS THEREAFTER.

TOO MANY DEER IN AN AREA WILL OVER-BROWSE THE RANGE. ONLY THE STRONGEST WILL SURVIVE ~ AND THE WEAKENED DOES WILL BEAR NO FAWNS.

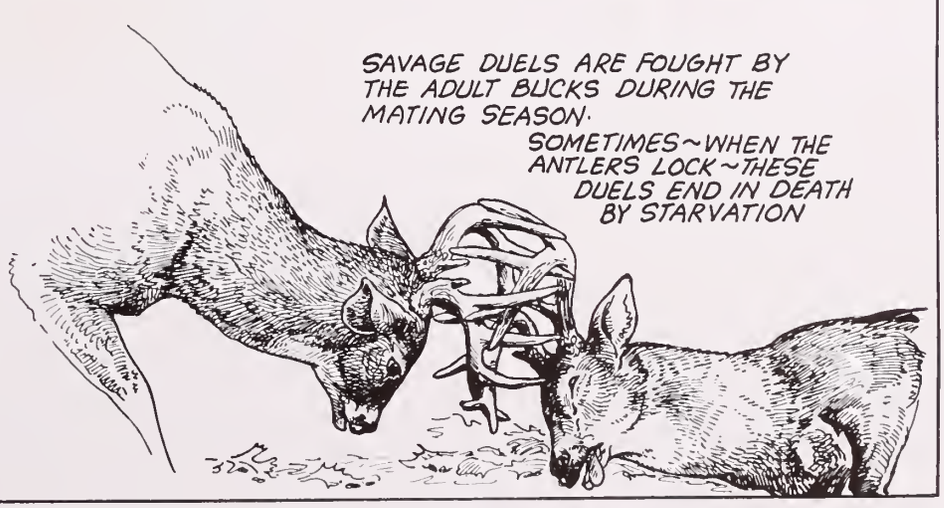
FOR THE SAKE OF THE HERD ~ DOES AS WELL AS BUCKS MUST BE TAKEN BY HUNTERS.

A BUCK'S AGE CAN NOT BE ACCURATELY TOLD BY THE ANTLERS.

THE ANTLERS ~ SHED IN LATE WINTER AND GROWN ANEW EACH SUMMER ~ INCREASE IN SIZE UNTIL THE ANIMAL REACHES HIS PRIME. AFTER THAT ~ EACH SET IS PROGRESSIVELY SMALLER.

SAVAGE DUELS ARE FOUGHT BY THE ADULT BUCKS DURING THE MATING SEASON.

SOMETIMES ~ WHEN THE ANTLERS LOCK ~ THESE DUELS END IN DEATH BY STARVATION



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